Peer-review report of

Roozenbeek, J., Remshard, M., & Kyrychenko, Y. (2024). Beyond the headlines: On the efficacy and effectiveness of misinformation interventions. *advances.in/psychology, 2*, e24569. https://doi.org/10.56296/aip00019

Round 1

Dear Authors,

Thank you for submitting your intriguing work to our special issue in advances.in/psychology. I was fortunate to receive evaluations from two leading experts in the field, and I extend my gratitude to them for their detailed and constructive reviews. Following our general journal practice, I read and evaluated the paper independently before consulting the reviewers' evaluations.

We all recognize the numerous strengths of your submission. You address an important topic that has been largely overlooked by researchers and do so in a way that could significantly guide future research developments. The paper is well-written and structured, and despite its brevity, it covers a substantial amount of ground. However, we see some opportunities to enhance the paper to fully realize its potential.

Both reviewers noted that the paper lacks some depth and further discussion. I agree with the first reviewer that it would be beneficial to propose some concrete and actionable recommendations for future research, such as discussing potential research designs or strategies. Generally, I believe the pedagogic impact of your paper can be enhanced through some structural changes that should be easily implemented:

1. I suggest adding subheadings to guide readers. These could be organized along "Challenges/Priorities…" (e.g., "Challenge 1: …") and "Recommendations," with the headings explicating the respective issues at hand.

2. A summary of your main criticisms and possible solutions in the form of a table or figure presented towards the end of the text would help drive home your message and improve retention of the important information you aim to convey. In this table, you could also highlight the priority of each issue if you believe some are more pressing than others.

3. If space permits (max 200 words), the abstract could be even more concrete in summarizing the criticisms and recommendations in a structured manner.

Reviewer 2 makes the important point that the essence of the problem in misinformation research mirrors that in many other fields of psychology. I agree that it would be valuable to integrate your arguments within this broader context.

Reviewer 2 further asks you to discuss why the field has developed (or stagnated) as it has. They note resource constraints and incentives in science as possible reasons. Additionally, an area that might require more attention in your manuscript is the very assumption that making individuals more resistant to misinformation is the solution. This highly individualistic perspective is likely bolstered by research mostly conducted in individualistic contexts by authors socialized in these contexts. However, many factors in humans' social environment may entirely offset lab-observed effects and largely explain the decay you refer to. You do touch upon this topic, but I believe it deserves more attention. In terms of recommendations, consider strategies such as targeting both individuals and risk factors in their environment, reaching a critical mass of people to change norms, or influencing people of significance. These are just a few examples, and I hope you will engage more deeply with this idea of contextualizing interventions.

A minor point: We all found your figures very informative, but please provide them in SVG lossless format. Additionally, present them either separately on portrait pages or together on a landscape page, depending on which format ensures readability. If possible, increase the font size a bit as well.

I hope you find our feedback helpful in further developing an already strong and thought-provoking piece. For this type of paper, authors usually have up to 10,000 words, and I believe you are currently well below this limit. Thus, you have ample space to extend your arguments. I am not requesting you to fully utilize this space, but I encourage you to take advantage of it. When submitting your revision, please include a revision letter that outlines how you addressed the various points, including excerpts that demonstrate the changes.

Thank you again for submitting your important work to our special issue. I look forward to receiving the revised version.

Best regards,

Jonas R. Kunst

Editor-in-Chief

Reviewer 1:

This manuscript provides an insightful, easy-to-read, and hard-to-argue-with overview of some of the key limitations associated with misinformation intervention research. Given that the misinformation literature is booming, there is room for lucid, big-picture commentaries like this, and I think readers of advances.in/psychology would get value from this piece.

I have two suggestions for how the paper could be improved.

First, the analysis (and virtually all the references used to contextualize it) are focused narrowly on the misinformation literature. This is understandable, given that this is the literature being critiqued. But the key points made – which largely comprise questions about ecological validity and temporal stability of interventions – have been echoed in many other areas of academia for decades. It might be worth nodding to this history and situating the argument in broader debates about efficacy versus effectiveness; the dangers of one-off interventions; the information-action fallacy, and so forth. Much of this work is now discussed as part of a new discipline of implementation science, and recognizing that broader discussion might help broaden and build the argument.

The following papers might be helpful primers for these debates:

Hobby J, Crowley J, Barnes K*, et al* Effectiveness of interventions to improve health behaviours of health professionals: a systematic review. *BMJ Open* 2022;**12 :**e058955. doi: 10.1136/bmjopen-2021-058955

Hagger, M.S., Weed, M. DEBATE: Do interventions based on behavioral theory work in the real world?. *Int J Behav Nutr Phys Act* **16**, 36 (2019). https://doi.org/10.1186/s12966-019-0795-4

Adrian Done, Chris Voss, Niels Gorm Rytter (2011). Best practice interventions: Short-term impact and long-term outcomes. *Journal of Operations Management, 29*, 500-513.

Singal AG, Higgins PD, Waljee AK. A primer on effectiveness and efficacy trials. Clin Transl Gastroenterol. 2014 Jan 2;5(1):e45. doi: 10.1038/ctg.2013.13. PMID: 24384867; PMCID: PMC3912314.

Brauer, M. (2024). Stuck on Intergroup Attitudes: The Need to Shift Gears to Change Intergroup Behaviors. *Perspectives on Psychological Science*, *19*(1), 280-294. https://doi.org/10.1177/17456916231185775

The second suggestion is that I would like to see some more “real talk” about WHY the literature is biased toward one-shot item-evaluation tasks and the varying constraints associated with conducting ecologically valid research on interventions. The reasons the misinformation literature suffers from this problem – just as research in numerous other disciplines suffers from this problem – is presumably to do with the financial and time constraints associated with studying behaviour in the wild. It’s possibly also partly due to the lack of career incentives for doing thorough, slow science. But it might be good to acknowledge these constraints explicitly, and I’d be curious to see what the authors think might be feasible solutions for what appears to be (at least in part) a structural problem.

Two other, more minor suggestions:

First, I liked the concentric circles, but the text was hard to read so it would be good to explore ways to increase the font.

Second, the authors might be aware that a review paper on misinformation interventions dropped in NHB last week: Toolbox of individual-level interventions against online misinformation | Nature Human Behaviour It might be worth referencing this piece to avoid duplication of points.

That’s it! I thank the authors for the opportunity to read what was an interesting and timely piece.

Reviewer 2:

The authors argue that testing the effectiveness of interventions designed to address misinformation should do more than consider only immediate task performance (e.g., correctly rating true and false news). It should also consider the real-world efficacy of such interventions. The authors also argue that what type of intervention might be successful for one person or situation, might not be for others. The authors end by arguing that the success of interventions should be examined in more detail—that is, tested not only with quantitative studies of task performance, but also qualitative and simulation-based research to better understand when interventions are most effective, and for whom.

The article provides a nice, brief summary of the system- and individual-level interventions that have thus far been developed in the literature. The key arguments are concisely presented, and I agree with the authors’ general case that more focus on the real-world efficacy of interventions is very important. It has always bothered me that whilst there are many, many studies showing that various interventions are successful in the short term, only a handful have examined whether the protective effects of interventions actually last over time. The authors identify this and other shortcomings such as generalizing from controlled experimental settings to real life social media use, the use of memory as the test of success (memories are fallible for many reasons), assumptions about the extent to which research participants perform the task as intended etc. All of these issues raise serious questions about the

scalability of interventions. When we are dealing with one of the most pressing challenges facing society at present, these criticisms are not trivial.

Suggestions for dealing with these issues should catch the attention of researchers working on this topic. For example, paying closer attention to what makes people interested in interventions in the first place seems crucial. A deeper understanding of what might work (and not work) in non-WEIRD countries is also necessary. The authors also raise an important point about a general lack of consideration regarding the unintended effects of interventions. Although this not a problem that is unique to misinformation research, it should be considered.

In general, I found little to disagree with here. My only problem with the article that it is very brief. I would have liked to see much more discussion and some concrete proposals. The article feels like it is finished before it really gets going. It feels more like a conversation piece than an article that can have any impact on the field. Nevertheless, the ideas are important, and I wish the authors all the best with this ongoing work.

Minor point – Figure 1 is not very user friendly. I cannot read it without zooming in on the text. Is there a better way to present this argument? Consider whether the figure is necessary or if the argument would be better more clearly laid out in the text.

Round 2

Dear Authors,

Thank you for carefully revising your manuscript in response to the previous review. I believe the manuscript is now very close to being publishable, pending some minor, mostly cosmetic revisions.

1. You cite a study by Lin and colleagues (2024) and discuss effect sizes, but these appear to be unstandardized and may not be intuitive to most readers. Please either provide standardized effect sizes or clarify what the effect sizes of -0.38 or -5.70 signify in this context.

2. As part of our standard procedure, we conducted a citation analysis on your manuscript. This analysis, which I will send to you separately from this decision letter, revealed some inconsistencies between the studies referred to in your paper and those listed in the reference section (also see the minor comment by Reviewer

2). Additionally, there are minor deviations from APA7 guidelines. Please address these issues in your final revision.

3. Please address the remaining issues raised by the second reviewer. I concur with the suggestion that it would be advantageous to briefly walk readers through the recommendations in the text, in addition to presenting them in the table.

I believe these minor revisions should not take much time, so I would appreciate receiving the revised manuscript within two weeks. This will help us ensure the fast publication of this important paper.

Best regards,

Jonas R. Kunst

Reviewer 1:

I like the original version of this paper, but this revised and expanded version is even better. I think it has benefited from the engagement with the literature on implementation science, and particularly the discussion of efficacy versus effectiveness. I also liked the expanded arguments, the incorporation of more recent literature, and decisions made in the revision to enhance readability (e.g., new sub-headings, more interpretable figures).

I don't need to see this manuscript again prior to publication, but jotted down some suggestions that the authors might want to consider:

* Perhaps in an effort to keep it on one page, Table 1 is cramped. For example, it is not as easy as it could be to track the text with the corresponding challenge (they bleed together a bit). Before publication it would be good to re-format to make it more reader friendly.

* The recommendations for assessment are presented in Table 1, but (unless I'm missing something) not discussed in text until 3 pages later, as part of the Conclusions section. This is not necessarily a problem, but the authors might want to take a look with fresh eyes and see if the flow is right. To my taste it felt as though the paper would be more streamlined if the Recommendations and Conclusions section were combined, so that they are discussed in the same breath. But I understand that restructures can cause their own problem, so leave this in the hands of the authors and the editor.

* The Lin paper, which is discussed at length in text, is not in the ref list

That's it! I thank the authors for the opportunity to read what was an interesting and timely piece.

Reviewer 2:

Thank you for addressing my concerns. The additional text and table both help highlight the contribution of the paper. I am happy with the changes you have made and the paper reads very nicely. I am happy to recommend publication.